

04-IEP-1K Committee Draft Document Hearings
Comments on the 2005 Committee Draft Energy Report

RCM Biothane (formerly RCM Digesters)
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Introduction:

Anaerobic digestion of animal waste is a practical, viable and environmentally sound method of on-site power production for California's dairies. In these waste-to-energy projects manure is channeled to a covered lagoon or plug-flow digester where biological processes reduce organic substrates to burnable methane (biogas). A gas handling system conveys the biogas to an engine-generator set that can supply power to the farm and deliver excess power to utility transmission lines. There are an estimated 2400 dairy farms in California, with the potential power production of over 200 MW. Capturing the associated methane could cut California's greenhouse gas (GHG) emissions by over 5.8 million metric tones of CO₂ equivalences (MMTCO₂ Eq.) annually (Choate, 2005). However, capital cost for these projects can easily run in excess of \$1,000,000 for covers, liners, engines, design and construction, and operational costs run approximately \$0.015/kWh. The inability of the producers to sell the power or net-meter the power on a kW-for-kW basis makes these projects economically unattractive for Californian dairies. Current rules governing power sales in California need to be changed so that these practical, viable and environmentally sound projects can be implemented in California.

Comments on Chapter 4:

We support the California Energy Commission's (the Commission) position that the State needs to increase its renewable resource pool (renewables) and reduce its reliance on natural gas and other fossil fuels, and that energy policy changes are needed to encourage renewables. Anaerobic digester technology is one such largely untapped resource that can help the State meet these goals.

Anaerobic digesters reduce the State's reliance on natural gas by evolving biogas from a renewable resource. These projects are typically in geographically remote areas and can mitigate line loss. Thus, they reduce the need for construction of new power plants, and they support current transmission infrastructure.

Anaerobic digesters are operationally more similar to combined heat and power (CHP) projects than to other forms of distributed generation (DG), such as wind or solar. The gas production of an anaerobic digester is directly related to the volume of manure being digested. As such, digester sizing often results in energy capacity greater than that of the farm load. Heat is often recovered from the exhaust manifold to heat the digester, dry

solids and serve other farm heating needs. Therefore, if rules governing CHP and DG policy are separated, digester technology should be included in the CHP category.

Under the current California Public Utility Commission (CPUC) pilot program (CPUC 2827.9) dairy biogas generators are only offered entry into the net-metering program with the investor owned utilities. This program only allows the customer-generator to credit and debit the generation component of their power bill, which comprises approximately one quarter of a typical power bill. Additional components of the customer-generator's power bill that must be paid on a monthly basis are, while not limited to, a customer charge, meter charge, demand charge, transmission charge, reliability charge, public purpose programs charge, nuclear decommissioning, competition transition charges, energy cost recovery amount charge and a DWR bond charge. Additionally, the law states that the investor owned utilities shall not be required to compensate the customer-generator for excess generation credits. This policy makes digesters an unattractive investment.

Administrative barriers to entry in the Renewable Portfolio Standard (RPS) include an arbitrary base of 1 MW minimum capacity for solicitation to PG&E's RPS, an arduous application process and a complex bidding process (PG&E Bidders Conference, Aug. 18, 2005). Dairies typically produce enough biogas to generate 100-1000 kW, which is much greater than on-farm demand, but precludes eligibility to bid in the RPS program. Additionally, farmers are engaged in the practice of farming, not legal administrative bidding processes. As such, the solicitation process is far too complex for the average person to engage in.

These projects would be economically viable if they were allowed to enter power purchasing agreements for Qualifying Facilities (QFs) to sell excess power. Contracts for QFs need to be reopened for new projects, and the utilities should be caused to purchase their power at reasonable rates. This policy would encourage energy production from renewable resources, promote conservation (net metering rewards waste by encouraging on-site consumption) and would make associated GHG emission reductions more economically feasible.

Comments on Chapter 6:

We agree with the Commission's position that the lack of long-term power purchasing agreements and the barriers to entry in the RPS (cited above) make anaerobic digester technology untenable for Californian dairies, and hamper development of other renewables. Unlike the intermittent nature of wind and solar, digesters produce power continuously and reliably, with the exception of scheduled outages for maintenance. They are often geographically remote and support existing transmission lines by lessening line-loss. Thus they should not increase the utility's cost of transmission.

Similar to wind power's need for return on investment for repowering, anaerobic digester technology is capital intensive and recovery of capital costs are required to implement these projects. The RPS needs to be extended to include projects producing less than

1 MW, and it needs to be simplified to be accessible to non-professional power producers. We agree with the Commission's finding that the RPS program lacks transparency and efficiency; the RPS program excludes public participation; the bidding process is unclear, and the "market price referent" is convoluted, unintelligible and overly complex.

Anaerobic digestion technology for dairy farms presents a reliable and renewable means of power production, and an as of yet largely unrealized biomass resource for the State. Enabling digester technology to be economically viable by causing the utilities to purchase excess power would provide additional environmental benefits including better waste management, decreasing air pollution and lessening GHG emissions. We are in accord with the Commission's directive to promote biomass resources for electricity generation, especially inter-governmental coordination of incentive, research and development programs, and promotion of entry into the RPS programs.

Comments on Chapter 8:

Current CPUC rules allow aggregation of meters under the net metering program (NEM-BIO) for dairy biogas operations. The aggregation provision lets customer-generators credit the generation component of power production, in dollar values, against the generation component of power consumption on all accounts owned by the customer-generator. This results in an offset of approximately one-fourth of the utility bill, assuming the customer-generator is generating power equal to its load but unable to physically serve its own load. It does not allow for directly offsetting electric use, as in kW-for-kW net metering. The customer-generator may generate 100% of its own load and still have to pay 75% of the utility bill that would have occurred without self-generation. Additionally, the utility is not required to compensate for any excess generation credits; the credit value is reset to zero on each anniversary of entry into NEM-BIO (CPUC 2827.9.B.3). This policy is a disincentive for energy production from biogas resources on dairies, and is not likely to benefit other water or wastewater agencies without being a kW-for-kW net metering program or offering compensation for excess generation.

Comments on Chapter 9:

We support the Commission's position on global climate change. GHG emission reductions are required from multiple sources to meet the State's emission reduction goals, and technical, economic, policy and political barriers may need to be overcome for many environmentally sound options to generate power from lower GHG emitting sources to be viable.

Anne Choate's report to the Commission on "Emission reduction opportunities for non-CO₂ greenhouse gasses in California" was found to be accurate in regard to the technologic capability of manure management options, specifically covered lagoon or plug-flow digesters, to substantially reduce GHG emissions. The report states that capturing and burning the associated methane with a covered lagoon or plug-flow

digester could cut California's greenhouse gas (GHG) emissions by over 5.8 MMTCO₂ Eq. annually.

Ms. Choate's economic analysis found that the reduction could be achieved at a zero or less than zero cost by generating electricity with the biogas. However, an assumption was made that the net metering program was a true kW-for-kW program, which resulted in the zero or less than zero cost for the digester option. As stated above, this is not the case. Digester construction and operation is capital intensive. Rules governing self-generation power sales need to be changed such that digesters are economically feasible.

Conclusion:

We are largely in accord with the Commission's 2005 Committee Draft Energy Report. We are pleased by the promotion of renewable resources and the acknowledgement of barriers to entry of renewables into the energy market under current policy. We recommend policy changes that incorporate small energy projects (less than 1 MW), and reopening power purchasing agreements that are accessible by non-professional energy producers. These policy changes can help the State reduce its reliance on fossil fuels, diversify its energy resources and achieve its GHG emission reduction goals.